Test Bank for Business Mathematics In Canada CDN 9th Jerome

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Chapter 02
Review and Applications of Algebra

Multiple Choice Questions

1. Simplify and collect like terms: $-a + (2b - c) - (a - b + c)$

A. $-2a + 3b - 2c$
B. $-2a + b - 2c$
C. $3b - 2c$
D. $-2a + 3b$
E. $-2a + 2b - 2c$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

2. Simplify and collect like terms: $1 - (3x - xy + y) - (-x + y - 5xy)$

A. $1 - 2x - 2y - 6xy$
B. $1 - 2x - 2y + 6xy$
C. $1 - 4x - 2y + 6xy$
D. $1 - 2x - 2y + 4xy$
E. $1 - 4x - 2y - 6xy$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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3. Simplify and collect like terms: $3(x-2y)(2x+y)$

A. $6x^2-6xy-6y^2$
B. $6x^2+10xy-6y^2$
C. $6x^2-9xy-6y^2$
D. $6x^2-9xy+6y^2$
E. $6x^2+10xy+6y^2$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

4. Simplify and collect like terms: $9x-[4y-3(x-y)]$

A. $12x+7y$
B. $6x-7y$
C. $6x+7y$
D. $12x-7y$
E. $9x-7y$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

5. Simplify and collect like terms: $\frac{4x+5}{8}-2.1(x-7)$

A. $-1.6x-14.075$
B. $-1.6x-15.325$
C. $2.6x+15.325$
D. $2.6x-14.075$
E. $-1.6x+15.325$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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6. Simplify and collect like terms: $\frac{x}{5}+\frac{2}{5}-0.7x^2-\frac{3}{5}x+\frac{3}{4}$

A. $-0.7x^2-0.4x+1.15$
B. $0.7x^2-0.4x+1.15$
C. $-0.7x^2-0.4x+0.35$
D. $0.7x^2-0.4x+0.35$
E. $-0.7x^2+0.8x+1.15$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

7. Simplify and collect like terms: $\frac{P}{1+0.07\times\frac{5}{12}}+2P\left(1+0.07\times\frac{4}{12}\right)$

A. $3.076P$
B. $3.018P$
C. $2.787P$
D. $3.532P$
E. $2.956P$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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8. Simplify and collect like terms: $x\left(1+0.045\times\frac{55}{365}\right)+\frac{2x}{\left(1-0.045\times\frac{200}{365}\right)}$

A. $2.957x$
B. $2.208x$
C. $3.057x$
D. $2.068x$
E. $1.983x$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

9. Simplify the following: $\frac{12xy-6y^2}{3y}$

A. $4x+2y$
B. $4xy-2y$
C. $4xy+2y^2$
D. $4x-2y$
E. $4xy-2y^2$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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10. Simplify the following: $\dfrac{10xy^2 - 15x^3y^2 + 25xy^4}{5xy}$

A. $2y^2 - 3x^2y + 5y^3$

B. $2xy - 3x^2y + 5y^3$

C. $2y - 3x^2y + 5y$

D. $2y - 3x^2 + 5y$

E. $2y - 3x^2y + 5y^3$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

11. Evaluate the following expression: $3x + 4y - 6xy$, for $x = 2, y = -3$

A. 30
B. -42
C. 54
D. -18
E. 24

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

12. Evaluate the following expression: $P(1 + rt)$, for $P = \$1575, r = 0.055, t = \dfrac{168}{365}$

A. $39.87
B. $1614.87
C. $1973.71
D. $16,128
E. $724.96

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

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13. Simplify the following: $a^2 \times a^6 \times a$

A. a^8

B. a^7

C. a^9

D. a^{12}

E. a^{13}

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

14. Simplify the following: $(a^2)(a^{-6})(a^3)$

A. a^{11}

B. a

C. a^{-36}

D. a^{-1}

E. a^{-5}

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

15. Simplify the following: $(a^2)(a^{-6})(a^3)$

A. a^{11}

B. a

C. a^{-36}

D. a^{-1}

E. a^{-5}

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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16. Simplify the following: $b^8 \div b^2$

A. b^4

B. b^{10}

C. b^{16}

D. b^{-6}

E. b^6

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

17. Simplify the following: $y^8 \div y^{-5}$

A. y^{13}

B. y^3

C. y^{-40}

D. y^{40}

E. y^{-13}

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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18. Simplify the following: $(x^5)^4$

A. y^{13}

B. y^3

C. y^{-40}

D. y^{40}

E. y^{-13}

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

19. Simplify the following: $(x^5)^4$

A. x^9

B. x^{20}

C. x

D. x^{-1}

E. x^0

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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20. Simplify the following: $(2x^3)^5$

A. x^{-1}

B. x^6

C. x^{-2}

D. x^7

E. x^2

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

21. Simplify the following: $\dfrac{(a^3)^{-2}}{a^6}$

A. a^0

B. a

C. a^{-11}

D. a^{-5}

E. a^{-12}

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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22. Simplify the following: $\frac{(2a^3b^2)^4}{a^2b^3}$

A. $16a^{10}b^5$

B. $2a^{10}b^5$

C. $16a^3b^3$

D. $2a^5b^5$

E. $16a^5b^3$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

23. Evaluate the following: $25^{3/2}$

A. 8.6
B. 37.5
C. 125
D. 5
E. 625

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

24. Evaluate the following: $-16^{5/4}$

A. 32
B. 64
C. -64
D. -32
E. 10

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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25. Evaluate the following: $\sqrt[4]{(121.89)^2}$

A. 14,857.17
B. 487.56
C. 3714.29
D. 60.945
E. 11.04

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

26. Evaluate the following: $\dfrac{1.04^{10} - 1}{0.04}$

A. 12.006
B. 698.137
C. 1.201
D. 36.006
E. 35.58

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

27. Evaluate the following: $\dfrac{1.055^{6} - 1}{0.055}$

A. 233.95
B. 6.888
C. 0.689
D. 23.395
E. 23.763

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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28. Evaluate the following: $\dfrac{1-1.075^{-8}}{0.075}$

A. -5.857
B. -10.446
C. 5.857
D. 0.5857
E. 13.485

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

29. Evaluate the following: $\dfrac{1-1.056^{-15}}{0.056}$

A. -9.971
B. -22.579
C. 58.29
D. 9.971
E. 25.743

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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30. Evaluate the following: $\left(\frac{4}{3}\right)^{2}\left(\frac{3}{4}\right)^{-3}\left(\frac{4}{3}\right)^{-5}$

A. $\frac{4}{3}$

B. $\frac{3}{4}$

C. $\frac{16}{3}$

D. $\frac{4}{9}$

E. 1

Difficulty: Hard
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

31. The retail price of a sweater is $161.00, which includes a markup of 40% of cost. What is the cost price of the sweater?

A. $115
B. $70.84
C. $64.40
D. $96.60
E. $100.63

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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32. The retail price of a packaged CD is $60.00, which includes a markup of 150% of cost. What is the cost price of the CD?
A. $40
B. $24
C. $36
D. $20
E. $32

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

33. The commission on a transaction is 3% of the first $100,000 and 2% of the balance. What was the amount of a transaction where the commission charged was $10,100?
A. $225,000
B. $545,000
C. $310,000
D. $355,000
E. $455,000

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

34. Sam has $20,000 to invest. He invested part of the money at 5% and the rest at 6%. His investments earned $1120 total interest for the year. How much did Sam invest at each rate?
A. $12,000 at 5% and $8000 at 6%
B. $10,000 at 5% and $10,000 at 6%
C. $6000 at 5% and $14,000 at 6%
D. $14,000 at 5% and $6000 at 6%
E. $8000 at 5% and $12,000 at 6%

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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35. Anders has $35,000 to invest. He invested part at 5.5% and part at 7%. His investments earned $2195 total interest for the year. How much did Anders invest at each rate?
A. $17,000 at 5.5% and $18,000 at 7%
B. $18,000 at 5.5% and $17,000 at 7%
C. $20,000 at 5.5% and $15,000 at 7%
D. $15,000 at 5.5% and $20,000 at 7%
E. $10,000 at 5.5% and $25,000 at 7%

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

36. Tickets for the school play were $3 for students and $5 for all others. The box office sold 750 tickets for a total of $3200. How many student tickets were sold?
A. 475
B. 275
C. 500
D. 250
E. 300

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

37. At a United Way fundraiser, students sold cinnamon buns for $2 each or 3 for $5. They sold 500 buns all together, and raised $900. How many cinnamon buns were sold as 3 for $5?
A. 100
B. 200
C. 300
D. 250
E. 150

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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38. What was the percent change in unit price when a box of tissues dropped from 200 to 150 tissues per box (with no change in the price per box)?
A. 25%
B. 20%
C. 30%
D. 35%
E. 33.3%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

39. What was the percent change in unit price when a box of tissues dropped from 400 to 350 tissues per box (with no change in the price per box)?
A. 12.5%
B. 15%
C. 17.5%
D. 11.7%
E. 14.3%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

40. What is the percent change in unit price of a bag of cookies if the number of cookies per bag is decreased by 15% (with no change in the price per bag)?
A. 17.6%
B. 15%
C. 20%
D. 10%
E. 11.1%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

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41. A loan company dropped the interest rate it charges on second mortgages from 9.5% to 7.9%. What percent reduction did this represent?
A. 16%
B. 16.8%
C. 1.6%
D. 20.3%
E. 15.7%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

42. A loan company dropped the interest rate it charges on second mortgages from 8.7% to 7.3%. What percent reduction did this represent?
A. 1.4%
B. 19.2%
C. 16.1%
D. 14%
E. 15.6%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

43. If the Canadian dollar is worth 18% less than the U.S. dollar, by what percentage does the U.S. dollar exceed the value of the Canadian dollar?
A. 15%
B. 18%
C. 24%
D. 21.95%
E. 20%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

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44. If the Canadian dollar is worth 22% less than the U.S. dollar, by what percentage does the U.S. dollar exceed the value of the Canadian dollar?
A. 22%
B. 20%
C. 25.2%
D. 30.8%
E. 28.2%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

45. A car dealer normally lists cars at 25% above cost. During a sale the manger offered a 10% reduction. If a car sold for $20,812.50, what was the cost price to the dealership?
A. $18,500
B. $23,125
C. $18,315
D. $16,650
E. $17,250

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

46. If the euro is worth 60% more than the Canadian dollar, how much less (in percentage terms) is the Canadian dollar worth than the euro?
A. 40%
B. 37.5%
C. 62.5%
D. 45%
E. 55%

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

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47. If the euro is worth 57% more than the Canadian dollar, how much less (in percentage terms) is the Canadian dollar worth than the euro?

A. 43%
B. 63.7%
C. 36.3%
D. 42%
E. 45%

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

48. Simplify and collect like terms: $8 - (2x + 4y - 3) - (4y + 10)$

A. $-8y - 2x + 21$
B. $-8y - 2x + 1$
C. $-8y - 2x - 2$
D. $-2x + 1$
E. $-2x + 21$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

49. Simplify and collect like terms: $(5x - 2y)(x - 2y)$

A. $5x^2 - 12xy - 4y^2$
B. $5x^2 + 8xy - 4y^2$
C. $5x^2 - 12xy + 4y^2$
D. $5x^2 - 8xy + 4y^2$
E. $5x^2 + 12xy + 4y^2$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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50. Simplify and collect like terms: $2(b-2)-(b-2)$

A. $b+6$
B. $3b-2$
C. $3b+2$
D. $b-2$
E. $b-6$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

51. Evaluate the following expression: $-4(r-t)-(2r-4t)$, for $r=\frac{1}{2}, t=\frac{1}{4}$

A. 1
B. 5
C. 3
D. -5
E. -1

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

52. Simplify and collect like terms: $\frac{6a+9}{3}-4(a-1)$

A. $-2a+13$
B. $-2a-1$
C. $-2a+7$
D. $2a+7$
E. $2a-1$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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53. Evaluate the following expression: $L(1-d_1)(1-d_2)$, for $L = \$1000, d_1 = 0.30, d_2 = 0.20$

A. $440.00
B. $500.00
C. $1785.71
D. $560.00
E. $600.00

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

54. Evaluate the following: $2.48832^{1/5}$

A. 95.396217
B. 0.0104826
C. 1.2
D. 3.0
E. 0.8333333

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

55. Simplify the following: $\left(\frac{r^3t^4}{t}\right)^3$

A. r^9t^4
B. r^6t^6
C. r^6t^7
D. r^9t^{11}
E. r^9t^9

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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56. Simplify the following: $\frac{(r^9)^2(r^6)}{r^{12}}$

A. r^5

B. $r^{17/12}$

C. r^{12}

D. r^2

E. r^{36}

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

57. Evaluate the following: $(8^2)(2^{-4})(-2)^2$

A. 1024
B. 256
C. 4
D. 48
E. 16

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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58. Solve for the unknown variable: $2x + \frac{1}{8}x = x + 10$

A. $3\frac{1}{5}$

B. $8\frac{8}{9}$

C. $-3\frac{1}{5}$

D. $4\frac{12}{17}$

E. $\frac{9}{80}$

Difficulty: Medium
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

59. Solve for the unknown variable: $\frac{2}{3}(x + 3) = -\frac{1}{2}(6x + 20) + 15$

A. $2\frac{5}{6}$

B. $\frac{9}{11}$

C. 1.5

D. $-2\frac{13}{22}$

E. 3.875

Difficulty: Hard
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

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60. Solve for the unknown variable: $-\left(\frac{1}{2}x - 5\right) = 2x - 10$

A. 6
B. -6
C. -10
D. $3\frac{1}{3}$
E. 10

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

61. Solve for the unknown variable: $\frac{x}{1.5^2} + 3x(1.5)^2 = 100$

A. 13.9082
B. 13.8996
C. 14.8148
D. 25
E. 225

Difficulty: Hard
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

62. An employee earns $1562.50 for 55 hours of work during last week. His regular workweek is 40 hours and he gets overtime at time and one-half the regular rate of pay. What is the regular hourly rate of pay?

A. $37.50
B. $28.41
C. $42.61
D. $58.59
E. $25.00

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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63. The stock market index decreased this month by one-thirteenth of last month's index. If this month's index is 2400, what was last month's index?
A. 2585
B. 2320
C. 2483
D. 2600
E. 2215

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

64. A company laid off 80% of its work force. The number of employees after the layoff is 3000. How many employees were there before the layoff?
A. 5400
B. 7200
C. 3600
D. 15,000
E. 3750

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

65. John and Jill agree to form a partnership. The partnership agreement requires that John invests $7000.00 less than one-half of what Jill is to invest. If the total investment of both is $125,000.00, how much is Jill's investment?
A. $88,000.00
B. $37,000.00
C. $78,666.67
D. $46,333.33
E. $74,393.33

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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66. If actual sales of $18,000 were 36% of budgeted sales, what were the budgeted sales?
A. $50,000
B. $52,920
C. $25,920
D. $10,080
E. $46,080

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

67. What number is 25% less than 96?
A. 120
B. 128
C. 384
D. 72
E. 125

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

68. 0.51% of $8500 is what amount?
A. $43,444.44
B. $1663.04
C. $43.35
D. $166,304.35
E. $434.44

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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69. 35% of $180 is what amount?
A. $63.00
B. $243.00
C. $117.00
D. $514.29
E. $276.92

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

70. What number is 87½% less than 250?
A. 218.75
B. 468.75
C. 133.33
D. 383.33
E. 31.25

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

71. After adding 2¼% to a sum of money, the new amount is $45,000.00. What was the original amount of money?
A. $43,987.50
B. $44,009.78
C. $2,000,000.00
D. $46,035.81
E. $20,000.00

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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72. Susan is paid a 15% commission of her sales. If she earns a commission of $3800, what was the amount of her sales?
A. $44,705.88
B. $25,333.33
C. $4470.59
D. $7030.00
E. $3230.00

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

73. An item listed at 40% above cost was sold by a dealer during a special sale at a 15% reduction from the list price. What did the item cost the dealer if it was sold for $23,765.00?
A. $23,494.81
B. $33,271.00
C. $19,970.59
D. $27,958.82
E. $43,965.25

Difficulty: Hard
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

74. After real estate fees of 3% had been deducted from the proceeds of the sale of a property, the real estate agent sent the vendor (seller) of the property $244,400. What was the amount of fees retained by the real estate agent?
A. $7558.76
B. $251,958.76
C. $7800.00
D. $7118.45
E. $237,281.55

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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75. The retail price of an item is $625.50. This includes a markup of three-quarters of the wholesale cost to the retailer. What is the wholesale cost?
A. $1094.63
B. $469.13
C. $834.00
D. $156.38
E. $357.43

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

76. $100 is what percent less than $125?
A. 125%
B. 45%
C. 25%
D. 20%
E. 15%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

77. What sum of money, increased by 7% equals $187.25?
A. $200.36
B. $174.14
C. $180.25
D. $175.00
E. $170.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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78. How much is 600 increased by 44%?
A. 840
B. 644
C. 864
D. 1,367
E. 788

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

79. What amount, when reduced by 60% equals $840?
A. $336
B. $900
C. $1,680
D. $1,400
E. $2,100

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

80. After a 5.25% raise, Johnny earned $19.28 per hour. What was his hourly rate before the raise?
A. $18.27
B. $18.32
C. $20.26
D. $18.78
E. $10.11

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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81. The population of Enfield has increased by 36% over the last five years. If the current population is 89,244 what was it 5 years ago?
A. 65,621
B. 53,244
C. 19,182
D. 57,123
E. 70,377

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

82. How much is 50 increased by 300%?
A. 350
B. 300
C. 250
D. 200
E. 150

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

83. What percent of 36 is 90?
A. 150%
B. 140%
C. 175%
D. 200%
E. 250%

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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84. A retailer purchases merchandise at 25% below the suggested retail price. If the retailer pays $375 for an item, what is the suggested retail price?
A. $468.75
B. $500.00
C. $525.00
D. $475.00
E. $450.00

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

85. The share value of RipOff Technologies has dropped this year by 85%, to a new low of $7.50 per share. How much money has been lost per share?
A. $42.50
B. $63.75
C. $8.82
D. $92.50
E. $15.00

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

86. During the last 30 years the price of gasoline has increased by 440%. If the current price per litre is $0.589, what was it 30 years ago?
A. $0.201
B. $0.149
C. $0.134
D. $0.109
E. $0.037

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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87. Bart purchased three-quarters of a 32% interest in a Swiss Chalet franchise for $270,000. What is implied value of the franchise?
A. $115,200
B. $632,800
C. $980,750
D. $1,125,000
E. $1,625,000

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

88. A mutual fund paid 3.5%, 4%, 3.5%, 6%, and 5% over the past five years. If you had invested $1000 at the beginning of the five-year period, what was your investment worth at the end of the five-year period? Calculate the result to the nearest cent.
A. $1220.00
B. $1617.34
C. $1771.38
D. $1239.96
E. $1180.92

Difficulty: Easy
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

89. A mutual fund paid 5.5%, 9%, -8%, 3.5% and 5% over the past five years. If you had invested $2000 at the beginning of the five-year period, what was your investment worth at the end of the five-year period? Calculate the result to the nearest cent.
A. $2300.00
B. $2699.37
C. $2570.83
D. $2608.09
E. $2299.46

Difficulty: Easy
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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90. A stock valued at $150 increased by 25% and then decreased by 25%. What was the value of the stock after the decrease? Calculate the result to the nearest cent.
A. $140.63
B. $150.00
C. $187.50
D. $112.50
E. $125.00

Difficulty: Easy
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

91. A stock valued at $75 decreased by 20% and then increased by 20%. What was the value of the stock after the increase? Calculate the result to the nearest cent.
A. $75.00
B. $72.00
C. $60.00
D. $90.00
E. $80.00

Difficulty: Easy
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

Short Answer Questions

92. Simplify and collect the like terms: $(-p) + (-3p) + (4p)$

0

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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93. Simplify and collect the like terms: $(5s - 2t) - (2s - 4t)$

$3s + 2t$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

94. Simplify and collect the like terms: $4x^2y + (-3x^2y) - (-5x^2y)$

$6x^2y$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

95. Simplify and collect the like terms: $1 - (7e^2 - 5 + 3e - e^3)$

$e^3 - 7e^2 - 3e + 6$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

96. Simplify and collect the like terms: $(6x^2 - 3xy + 4y^2) - (8y^2 - 10xy - x^2)$

$7x^2 + 7xy - 4y^2$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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97. Simplify and collect the like terms:

$(7m^3 - m - 6m^2 + 10) - (5m^3 - 9 + 3m - 2m^2)$

$2m^3 - 4m^2 - 4m + 19$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

98. Simplify and collect the like terms: $2(7x - 3y) - 3(2x - 3y)$

$8x + 3y$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

99. Simplify and collect the like terms: $4(a^2 - 3a - 4) - 2(5a^2 - a - 6)$

$-6a^2 - 10a - 4$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

100. Simplify and collect the like terms: $15x - [4 - 2(5x - 6)]$

$25x - 16$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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101. Simplify and collect the like terms: $6a - [3a - 2(2b - a)]$

$a + 4b$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

102. Simplify the following: $4a(3ab - 5a + 6b)$

$12a^2b - 20a^2 + 24ab$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

103. Simplify the following: $9k(4 - 8k + 7k^2)$

$36k - 72k^2 + 63k^3$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

104. Simplify the following: $-5xy(2x^2 - xy - 3y^2)$

$-10x^3y + 5x^2y^2 + 15xy^3$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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105. Simplify the following: $-(p^2 - 4pq - 5p)\left(\frac{2q}{p}\right)$

$-2pq + 8q^2 + 10q$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

106. Simplify the following and collect the like terms: $(4r - 3t)(2t + 5r)$

$20r^2 - 7rt - 6t^2$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

107. Simplify the following and collect the like terms: $(3p^2 - 5p)(-4p + 2)$

$-12p^3 + 26p^2 - 10p$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

108. Simplify the following and collect the like terms:
$3(a - 2)(4a + 1) - 5(2a + 3)(a - 7)$

$2a^2 + 34a + 99$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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109. Simplify the following and collect the like terms:
$5(2x - y)(y + 3x) - 6x(x - 5y)$

$24x^2 + 25xy - 5y^2$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

110. Simplify the following: $\dfrac{18x^2}{3x}$

$-3\dfrac{a}{b}$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

111. Simplify the following: $\dfrac{6a^2b}{-2ab^2}$

$-3\dfrac{a}{b}$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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112. Simplify the following: $\dfrac{x^2y - xy^2}{xy}$

$x - y$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

113. Simplify the following: $\dfrac{-4x + 10x^2 - 6x^3}{-0.5x}$

$8 - 20x + 12x^2$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

114. Simplify the following: $\dfrac{12x^3 - 24x^2 + 36x}{48x}$

$\dfrac{x^2 - 2x + 3}{4}$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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115. Simplify the following: $\dfrac{32a^2b - 8ab + 14ab^2}{2ab}$

$16a - 4 + 7b$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

116. Simplify the following: $\dfrac{4a^2b^3 - 6a^3b^2}{2ab^2}$

$2ab - 3a^2$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

117. Simplify the following: $\dfrac{120(1+i)^2 + 180(1+i)^3}{360(1+i)}$

$\dfrac{2(1+i) + 3(1+i)^2}{6}$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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118. Evaluate the following expression for the given value of the variable:
$3d^2 - 4d + 15$ for $d = 2.5$

23.75

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

119. Evaluate the following expression for the given values of the variables:
$15g - 9h + 3$ for $g = 14, h = 15$

78

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

120. Evaluate the following expression for the given values of the variables:
$7x(4y - 8)$ for $x = 3.2, y = 1.5$

-44.8

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

121. Evaluate the following expression for the given values of the variables: $I \div Pr$ for $P = \$500, I = \$13.75, r = 0.11$

0.25

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

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122. Evaluate the following expression for the given values of the variables and calculate the result accurate to the nearest cent: $\frac{I}{rt}$ for $r = 0.095, I = \$23.21, t = \frac{283}{365}$

$315.11

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

123. Evaluate the following expression for the given values of the variables and calculate the result accurate to the nearest cent: $\frac{N}{1-d}$ for $N = \$89.10, d = 0.10$

$99.00

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

124. Evaluate the following expression for the given values of the variables and calculate the result accurate to the nearest cent: $L(1-d_1)(1-d_2)(1-d_3)$ for $L = \$490, d_1 = 0.125, d_2 = 0.15, d_3 = 0.05$

$346.22

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

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125. Evaluate the following expression for the given values of the variables and calculate the result accurate to the nearest cent: $P(1+rt)$ for $P = \$770, r = 0.13, t = \frac{223}{365}$

$831.16

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

126. Evaluate the following expression for the given values of the variables and calculate the result accurate to the nearest cent: $\frac{S}{1+rt}$ for $S = \$2500, r = 0.085, t = \frac{123}{365}$

$2430.38

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

127. Evaluate the following expression for the given values of the variables and calculate the result accurate to the nearest cent: $\frac{S}{(1+i)^n}$ for $S = \$850, i = 0.0075, n = 6$

$812.73

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

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128. Evaluate the following expression for the given values of the variables and calculate the result accurate to the nearest cent: $P(1+i)^n$ for $P = \$1280, i = 0.025, n = 3$

$1378.42

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

129. Simplify the following expression and collect the like terms:
$\frac{x}{2} - x^2 + \frac{4}{5} - 0.2x^2 - \frac{4}{5}x + \frac{1}{2}$

$-1.2x^2 - 0.3x + 1.3$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

130. Simplify the following expression and collect the like terms: $\frac{2x+9}{4} - 1.2(x-1)$

$-0.7x + 3.45$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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131. Simplify the following expression and collect the like terms: $\frac{2x}{1.045} - \frac{2.016x}{3} + \frac{x}{2}$

$1.7419x$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

132. Simplify the following expression and collect the like terms:
$\frac{8x}{0.5} + \frac{5.5x}{11} + 0.5(4.6x - 17)$

$18.8x - 8.5$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

133. Simplify the following expression and collect the like terms. Maintain five-figure accuracy.

$$y\left(1 - 0.125 \times \frac{213}{365}\right) + \frac{2y}{1 + 0.125 \times \frac{88}{365}}$$

$2.8685y$

Difficulty: Hard
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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134. Simplify the following expression and collect the like terms. Maintain five-figure accuracy. $\dfrac{P}{1+0.095\times\dfrac{5}{12}}+2P\left(1+0.095\times\dfrac{171}{365}\right)$

$3.0509P$

Difficulty: Hard
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

135. Simplify the following expression and collect the like terms. Maintain five-figure accuracy. $\dfrac{h}{(1+0.055)^2}-3h(1+0.055)^3$

$-2.6243h$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

136. Simplify the following expression and collect the like terms. Maintain five-figure accuracy. $k(1+0.04)^2+\dfrac{2k}{(1+0.04)^2}$

$2.9307k$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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137. Evaluate the following expression for the given values of the variables:
$(1+i)^m - 1$ for $i = 0.0225, m = 4$

0.093083

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

138. Evaluate the following expression for the given values of the variables and calculate the result accurate to the nearest cent: $R\left[\frac{(1+i)^n - 1}{i}\right]$ for $R = \$550, i = 0.085, n = 3$

$1794.22

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

139. Evaluate the following expression for the given values of the variables and calculate the result accurate to the nearest cent: $R\left[\frac{(1+i)^n - 1}{i}\right](1+i)$ for $R = \$910, i = 0.1038129, n = 4$

$4687.97

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

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140. Evaluate the following expression for the given values of the variables and calculate the result accurate to the nearest cent: $\frac{R}{i}\left[1-\frac{1}{(1+i)^n}\right]$ for $R=\$630, i=0.115, n=2$

$1071.77

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

141. Evaluate the following expression for the given values of the variables and calculate the result accurate to the nearest cent: $P(1+rt_1)+\frac{S}{1+rt_2}$ for $P=\$470, S=\$390, r=0.075, t_1=\frac{104}{365}, t_2=\frac{73}{365}$

$864.28

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

142. Simplify the following: $a^2 \times a^3$

a^5

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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143. Simplify the following: $(x^6)(x^{-4})$

x^2

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

144. Simplify the following: $b^{10} \div b^6$

b^4

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

145. Simplify the following: $h^7 \div h^{-4}$

h^{11}

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

146. Simplify the following: $(1+i)^4 \times (1+i)^9$

$(1+i)^{13}$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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147. Simplify the following: $(1+i) \times (1+i)^n$

$(1+i)^{n+1}$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

148. Simplify the following: $(x^4)^7$

x^{28}

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

149. Simplify the following: $(y^3)^3$

y^9

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

150. Simplify the following: $(t^6)^{1/3}$

t^2

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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151. Simplify the following: $(n^{0.5})^8$

n^4

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

152. Simplify the following: $\dfrac{(x^5)(x^6)}{x^9}$

x^2

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

153. Simplify the following: $\dfrac{(x^5)^6}{x^9}$

x^{21}

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

154. Simplify the following: $[2(1+i)]^2$

$4(1+i)^2$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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155. Simplify the following: $\left(\frac{1+i}{3i}\right)^3$

$$\frac{(1+i)^3}{27i^3}$$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

156. Simplify the following: $\frac{4r^5t^6}{(2r^2t)^3}$

$$\frac{t^3}{2r}$$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

157. Simplify the following: $\frac{(-r^3)(2r)^4}{(2r^{-2})^2}$

$$-4r^{11}$$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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158. Evaluate the following expression: $8^{4/3}$

16

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

159. Evaluate the following expression: $\left(-27^{2/3}\right)$

-9

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

160. Evaluate the following expression to six-figure accuracy: $7^{3/2}$

18.5203

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

161. Evaluate the following expression to six-figure accuracy: $5^{-3/4}$

0.299070

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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162. Evaluate the following expression: $(0.001)^{-2}$

1,000,000

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

163. Evaluate the following expression to six-figure accuracy: $0.893^{-1/2}$

1.05822

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

164. Evaluate the following expression to six-figure accuracy: $(1.0085)^5(1.0085)^3$

1.07006

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

165. Evaluate the following expression to six-figure accuracy: $(1.005)^3(1.005)^{-6}$

0.985149

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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166. Evaluate the following expression to six-figure accuracy: $\sqrt[3]{1.03}$

1.00990

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

167. Evaluate the following expression to six-figure accuracy: $\sqrt[6]{1.05}$

1.00816

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

168. Evaluate the following expression: $(4^4)(3^{-3})\left(-\frac{3}{4}\right)^3$

-4

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

169. Evaluate the following expression to six-figure accuracy: $\left[\left(-\frac{3}{4}\right)^2\right]^{-2}$

3.16049

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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170. Evaluate the following expression to six-figure accuracy: $\left(\frac{2}{3}\right)^3\left(-\frac{3}{2}\right)^2\left(-\frac{3}{2}\right)^{-3}$

-0.197531

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

171. Evaluate the following expression to six-figure accuracy: $\left(-\frac{2}{3}\right)^3 \div \left(\frac{3}{2}\right)^{-2}$

-0.666667

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

172. Evaluate the following expression to six-figure accuracy: $\frac{1.03^{16}-1}{0.03}$

20.1569

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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173. Evaluate the following expression to six-figure accuracy: $\dfrac{(1.008\bar{3})^{30}-1}{0.008\bar{3}}$

33.9235

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

174. Evaluate the following expression to six-figure accuracy: $\dfrac{1-1.0225^{-20}}{0.0225}$

15.9637

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

175. Evaluate the following expression to six-figure accuracy: $\dfrac{1-(1.00\bar{6})^{-32}}{0.00\bar{6}}$

28.7312

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

176. Evaluate the following expression to six-figure accuracy: $(1+0.0275)^{1/3}$

1.00908

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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177. Evaluate the following expression to six-figure accuracy: $(1 + 0.055)^{1/6} - 1$

0.00896339

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

178. Solve the following equation: $10a + 10 = 12 + 9a$

2

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

179. Solve the following equation: $29 - 4y = 2y - 7$

6

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

180. Solve the following equation: $0.5(x - 3) = 20$

43

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

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181. Solve the following equation: $\frac{1}{3}(x-2)=4$

14

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

182. Solve the following equation: $y=192+0.04y$

200

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

183. Solve the following equation: $x-0.025x=341.25$

350

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

184. Solve the following equation: $12x-4(2x-1)=6(x+1)-3$

0.5

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

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185. Solve the following equation: $3y - 4 = 3(y + 6) - 2(y + 3)$

8

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

186. Solve the following equation: $8 - 0.5(x + 3) = 0.25(x - 1)$

9

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

187. Solve the following equation: $5(2 - c) = 10(2c - 4) - 6(3c + 1)$

8

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

188. Solve the following equation: $3.1t + 145 = 10 + 7.6t$

30

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

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189. Solve the following equation: $1.25y - 20.5 = 0.5y - 11.5$

12

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

190. Solve the following equation accurate to the cent: $\frac{x}{1.1^2} + 2x(1.1)^3 = \$1000$

$286.66

Difficulty: Medium
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

191. Solve the following equation accurate to the cent:
$\frac{3x}{1.025^6} + x(1.025)^8 = \$2641.35$

$694.13

Difficulty: Medium
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

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192. Solve the following equation accurate to the cent:

$$\frac{2x}{1.03^7} + x + x(1.03^{10}) = \$1000 + \frac{\$2000}{1.03^4}$$

$699.47

Difficulty: Hard
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

193. Solve the following equation accurate to the cent:

$$x(1.05)^3 + \$1000 + \frac{x}{1.05^7} = \frac{\$5000}{1.05^2}$$

$1892.17

Difficulty: Hard
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

194. Solve the following equation accurate to the cent:

$$x\left(1 + 0.095 \times \frac{84}{365}\right) + \frac{2x}{\left(1 + 0.095 \times \frac{108}{365}\right)} = \$1160.20$$

$391.01

Difficulty: Hard
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

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195. Solve the following equation accurate to the cent:

$$\frac{x}{1+0.115\times\frac{78}{365}}+3x\left(1+0.115\times\frac{121}{365}\right)=\$1000\left(1+0.115\times\frac{43}{365}\right)$$

$247.79

Difficulty: Hard
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

196. Use $I = Prt$ to calculate *P*, if $r = 0.05, I = \$6.25, t = 0.25$

$500.00

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

197. Use $PV = \frac{PMT}{i}$ to calculate *i*, if $PMT = \$900, PV = \$150{,}000$

0.006

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

198. Use $S = P(1 + rt)$ to calculate *P*, if $r = 0.004, S = \$3626, t = 9$

$3500.00

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

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199. Use $N = L(1 - d)$ to calculate *L*, if $N = \$891, d = 0.10$

$990.00

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

200. Use $N = L(1 - d)$ to calculate *d*, if $N = \$410.85, L = \$498$

0.175

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

201. Use $S = P(1 + rt)$ to calculate *t*, if $r = 0.0025, S = \$5100, P = \$5000$

8

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

202. Use $NI = (CM)X - FC$ to calculate *CM*, if $NI = \$15{,}000, X = 5000, FC = \$60{,}000$

$15.00

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

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203. Use $NI = (CM)X - FC$ to calculate *X*, if $NI = -\$542.50, CM = \$13.50, FC = \$18{,}970$

1365

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

204. Use $N = L(1 - d_1)(1 - d_2)(1 - d_3)$ to calculate *L*, if $N = \$1468.80, d_1 = 0.20, d_2 = 0.15, d_3 = 0.10$

$2400.00

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

205. Use $N = L(1 - d_1)(1 - d_2)(1 - d_3)$ to calculate d_2, if $N = \$70.29, L = \$99.99, d_1 = 0.20, d_3 = 0.05$

0.075

Difficulty: Medium
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

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206. Use $FV = PV(1 + i_1)(1 + i_2)(1 + i_3)$ to calculate i_1, if $PV = \$1000, FV = \$1094.83, i_2 = 0.03, i_3 = 0.035$

0.027

Difficulty: Medium
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

207. Use $FV = PMT\left[\frac{(1+i)^n - 1}{i}\right]$ to calculate *PMT*, if $FV = \$1508.54, n = 4, i = 0.05$

$350.00

Difficulty: Medium
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

208. Use $PV = PMT\left[\frac{1 - (1+i)^{-n}}{i}\right]$ to calculate *PMT*, if $PV = \$6595.20, n = 20, i = 0.06$

$575.00

Difficulty: Medium
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

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209. Rearrange $I = Prt$ to isolate *t* on the left side.

$$t = \frac{I}{Pr}$$

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

210. Rearrange $PV = \frac{PMT}{i}$ to isolate *i* on the left side.

$$i = \frac{PMT}{PV}$$

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

211. Rearrange $N = L(1 - d)$ to isolate *d* on the left side.

$$d = 1 - \frac{N}{L}$$

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

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212. Rearrange $NI = (CM)X - FC$ to isolate *CM* on the left side.

$$CM = \frac{NI + FC}{X}$$

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

213. Rearrange $NI = (CM)X - FC$ to isolate *X* on the left side.

$$X = \frac{NI + FC}{CM}$$

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

214. Rearrange $S = P(1 + rt)$ to isolate *r* on the left side.

$$r = \frac{S - P}{Pt}$$

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

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215. Rearrange $S = P(1 + rt)$ to isolate *t* on the left side.

$$t = \frac{S - P}{Pr}$$

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

216. Rearrange $N = L(1 - d_1)(1 - d_2)(1 - d_3)$ to isolate d_1 on the left side.

$$d_1 = 1 - \frac{N}{L(1 - d_2)(1 - d_3)}$$

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

217. Rearrange $N = L(1 - d_1)(1 - d_2)(1 - d_3)$ to isolate d_3 on the left side.

$$d_3 = 1 - \frac{N}{L(1 - d_1)(1 - d_2)}$$

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

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218. Rearrange $FV = PV(1+i)^n$ to isolate *PV* on the left side.

$$PV = \frac{FV}{(1+i)^n}$$

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

219. Use $FV = PV(1+i)^n$ to calculate *i*, if $PV = \$2000, FV = \$9321.91, n = 20$

0.08

Difficulty: Medium
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

220. Use $PV = FV(1+i)^{-n}$ to calculate *i*, if $PV = \$5167.20, FV = \$10{,}000, n = 15$

0.045

Difficulty: Medium
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

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221. Rearrange $FV = PV(1+i)^n$ to isolate *i* on the left side.

$$i = \left(\frac{FV}{PV}\right)^{1/n} - 1$$

Difficulty: Medium
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

222. A web site had 2/7 more hits last month than in the same month of the preceding year. If there were 2655 hits last month, how many were there 1 year earlier?

2065

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

223. The retail price of a pair of skis consists of the wholesale cost to the retailer plus the retailer's markup. If skis retailing for $712 are marked up by 60% of the wholesale cost, what is that wholesale cost?

$445.00

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

224. The price tags in Annie's Flower Shop include the 13% Harmonized Sales Tax (HST). How much HST will she report for a plant sold at $39.55?

$4.55

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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225. A stockbroker's commission on a transaction is 2.5% of the first $5000 of the transaction amount and 1.5% of the remainder. What was the amount of a transaction that generated a total commission of $227?

$11,800

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

226. A caterer has the following price structure for banquets. The first 20 meals are charged the basic price per meal. The next 20 meals are discounted by $2 each and all additional meals are each reduced by $3. If the total cost for 73 meals comes to $1686, what is the basic price per meal?

$25.00

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

227. Econocar offers two plans for one-week rentals of a compact car. A rate of $295 per week includes the first 1000 kilometres. Extra distance costs 15 cents per kilometre. A weekly rate of $389 allows unlimited driving. Rounded to the nearest kilometre, beyond what driving distance is the unlimited driving plan cheaper?

1627 km

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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228. Alicia pays 38% income tax on any additional earnings. She has an opportunity to work overtime at 1.5 times her base wage of $23.50 per hour. Rounded to the nearest quarter hour, how much overtime must she work to earn enough money (after tax) to buy a canoe that costs $2750 including sales taxes?

125 ¾ hours

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

229. Classic Homes has found from experience that there should be 40% as many two-bedroom homes as three-bedroom homes in a subdivision, and twice as many two-bedroom homes as four-bedroom homes. How many homes of each type should Classic build in a new 96-home subdivision?

24 two-bedroom; 60 three-bedroom; 12 four-bedroom

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

230. Broadway Mazda usually spends half as much on radio advertising as on newspaper advertising, and 60% as much on television advertising as on radio advertising. If next year's total advertising budget is $160,000, how much (rounded to the nearest dollar) should be allocated to each form of advertising?

Radio: $44,444; TV: $26,667; Newspaper: $88,889

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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231. A city's commercial construction by-laws require five parking spaces for every 100 square metres of retail rental space in a shopping centre. Four percent of the parking spaces must be large spaces for the physically handicapped. Of the remainder, there must be 40% more regular-size spaces than "small-car" spaces. How many parking spaces of each type are required for a 27,500 square metre shopping centre?

55 handicapped; 550 small-car; 770 regular

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

232. Erin has invested in both an equity mutual fund and a bond mutual fund. Her financial advisor told her that her overall portfolio rose in value by 1.1% last year. Erin noted in the newspaper that the equity fund lost 3.3% last year while the bond fund rose 7.7%. What percentage of her portfolio was in the equity fund at the beginning of the year?

60%

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

233. Steel is an alloy of iron and nickel. A steel recycling company has two piles of scrap steel. Pile A contains steel with 5.25% nickel content. Pile B contains steel with 2.84% nickel. The company has an order for 32.5 tonnes of steel containing 4.15% nickel. How much scrap steel should be taken from each pile for reprocessing?

17.67 tonnes from A; 14.83 tonnes from B

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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234. The board of directors of Meditronics Inc. has designated 100,000 stock options for distribution to employees and management of the company. Each of three executives is to receive 2000 more options than each of eight scientists and engineers. Each scientist and engineer is to receive 50% more options than each of 14 technicians. How many options will a person in each position receive?

Technician: 3082; Scientist and Engineer: 4623; Executive: 6623

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

235. Dash Canada offers two long-distance telephone plans. Plan X costs 6.5 cents per minute for calls between 8 a.m. and 6 p.m. weekdays (business hours) and 4.5 cents per minute at other times. Plan Y costs 5.3 cents per minute any time. Above what percentage of business-hour usage will Plan Y be cheaper?

40%

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

236. Quality Grocer makes its own bulk "trail mix" by mixing raisins and peanuts. The wholesale cost of raisins is $3.75 per kg and the cost of peanuts is $2.89 per kg. To the nearest 0.1 kg, what amounts of peanuts and raisins should be mixed to produce 50 kg of trail mix with an effective wholesale cost of $3.20 per kg?

Peanuts: 32.0 kg; Raisins 18.0 kg

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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237. A firm received a bill from its accountant for $3310, representing a combined total of 41 "billable" hours for both the Certified General Accountant (CGA) and her accounting technician, for conducting the firm's audit. If the CGA charges her time at $120 per hour and the technician's time at $50 per hour, how many hours did each work on the audit?

CGA: 18 hours; technician: 23 hours

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

238. Joan, Stella, and Sue have agreed to form a partnership. For the original capital investment of $32,760, Sue agrees to contribute 20% more than Joan, and Joan agrees to contribute 20% more than Stella. How much will each contribute?

Stella: $9000; Joan: $10,800; Sue: $12,960

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

239. The annual net income of the SGR partnership is to be distributed so that Sven receives 30% less than George, and Robert receives 25% more than George. If the past year's net income was $88,880, what amount should be allocated to each?

George: $30,128.81; Robert: $37,661.02; Sven: $21,090.17

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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240. It takes 20 minutes of machine time to manufacture Product X and 30 minutes of machine time to manufacture Product Y. If the machine operated 47 hours last week to produce a combined total of 120 units of the two products, how many units of Y were manufactured?

42

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

241. The tickets for a hockey game cost $19.00 for the blue section and $25.50 for the red section. If 4460 tickets were sold for a total of $93,450, how many seats were sold in each section?

Blue: 3120; Red: 1340

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

242. The annual dues for the Southern Pines Golf Club are $2140 for regular members and $856 for student members. If the total revenue from the dues of 583 members for the past year was $942,028, how many members did the club have in each category?

238 student members and 345 regular members

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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243. The Hungry Heifer diner offers an all-you-can-eat buffet at $12.95 per adult and $8.95 per child. On a particular day, the diner had total buffet revenue of $3304.70 from 266 customers. How many of the customers were children?

35

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

244. Tina drove from Calgary to Vancouver, a distance of 1000 km, in 12.3 hours. She drove at 100 km/h on the "open road," but slowed to 50 km/h on urban and curving roads. What distance did she drive at each speed? (Hint: Travelling time at a particular speed = Distance/Speed)

230 km at 50 km/h; 770 km at 100 km/h

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

245. Product X requires 30 minutes of machining on a lathe, and product Y requires 45 minutes of machining. If the lathe was operated for 60.5 hours last week for machining a combined total of 93 units of Products X and Y, how many units of each product were produced?

37 units of X and 56 units of Y

Difficulty: Easy
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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246. As a fundraiser, a local charity sold raffle tickets on a trip to Disney World at $2 each or three for $5. In all, 3884 tickets were sold for a total of $6925. How many people bought tickets at the three for $5 discount?

843 people

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

247. A convenience store sells canned soft drinks at $4.35 for a six-pack or 90 cents for a single can. If revenue from the sale of 225 cans of soft drinks on a weekend was $178.35, how many six-packs and how many single cans were sold?

23 six-packs and 87 single cans

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

248. Mr. Parker structured his will so that each of his four children will receive half as much from the proceeds of his estate as his wife, and each of 13 grandchildren will receive one-third as much as each child. After his death, $759,000 remains after expenses and taxes for distribution among his heirs. How much will each child and grandchild receive?

Each child: $73,451.62 (+/- $0.01); Each grandchild: $24,483.87 (+/- $0.01)

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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249. To coordinate production in a three-stage manufacturing process, Stage B must be assigned 60% more workers than Stage A. Stage C requires three-quarters as many workers as Stage B. How should the foreman allocate 114 workers among the three stages?

Stage A: 30; Stage B: 48; Stage C: 36

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

250. Fred has centralized the purchasing and recordkeeping functions for his three pharmacies in a single office. The annual costs of the office are allocated to the three stores. The Hillside store is charged $1000 less than twice the charge to the Barnett store. The Westside store is charged $2000 more than the Hillside store. What is the charge to the Westside store if the cost of operating the central office for a year is $27,600?

$12,040

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

251. $100,000 is to be distributed under a firm's profit-sharing plan. Each of 3 managers is to receive 20% more than each of 26 production workers. How much will each manager and production worker receive?

Each worker: $3378.38; Each manager: $4054.05

Difficulty: Hard
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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252. What is the percent rate if a quantity is four times the size of the base?

400%

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

253. What is the percent rate if a quantity is $\frac{1}{1000}$ of the base?

0.1%

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

254. If the percent rate is 1000%, what multiple is the portion of the base?

10 times

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

255. If the percent rate is 0.01%, what fraction is the portion of the base?

$\frac{1}{10,000}$

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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256. Calculate 1.75% of $350 accurate to the cent.

$6.13

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

257. Calculate $6.\overline{6}\%$ of $666.66 accurate to the cent.

$44.44

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

258. What percent is $1.50 of $11.50? Calculate to three-figure accuracy.

13.0%

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

259. What percent is 88% of $44? Calculate to three-figure accuracy.

2.00%

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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260. $45 is 60% of what amount accurate to the cent?

$75.00

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

261. $69 is 30% of what amount accurate to the cent?

$230.00

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

262. What amount is 233.3% of $75 accurate to the cent?

$174.98

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

263. What amount is 0.075% of $1650 accurate to the cent?

$1.24

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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264. $134 is what percent of $67? Calculate to three-figure accuracy.

200%

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

265. $1.34 is what percent of $655? Calculate to three-figure accuracy.

0.205%

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

266. 150% of $60 is what amount accurate to the cent?

$90.00

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

267. $0.58\overline{3}\%$ of $1500 is what amount accurate to the cent?

$8.75

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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268. 7½% of what amount is $1.46 accurate to the cent?

$19.47

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

269. 12¾% of what amount is $27.50 accurate to the cent?

$215.69

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

270. What percent of $950 is $590? Calculate to three-figure accuracy.

62.1%

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

271. What percent of $590 is $950? Calculate to three-figure accuracy.

161%

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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272. 95% of what amount is $100 accurate to the cent?

$105.26

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

273. 8⅓% of what amount is $10 accurate to the cent?

$120.00

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

274. 30 m is what percent of 3 km? Calculate to three-figure accuracy.

1.00%

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

275. 500 grams is what percent of 2.8 kilograms? Calculate to three-figure accuracy.

17.9%

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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276. How much is ½% of $10 accurate to the cent?

$0.05

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

277. 0.75% of $100 is what amount accurate to the cent?

$0.75

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

278. $180 is 120% of what amount accurate to the cent?

$150.00

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

279. $559.35 is 113% of what amount accurate to the cent?

$495.00

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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280. 130½% of $455 is what amount accurate to the cent?

$593.78

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

281. 0.0505% of $50,000 is what amount accurate to the cent?

$25.25

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

282. $281.25 is 225% of what amount accurate to the cent?

$125.00

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

283. 350% of what amount is $1000 accurate to the cent?

$285.71

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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284. $10 is 0.5% of what amount accurate to the cent?

$2000.00

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

285. $1.25 is ¾% of what amount accurate to the cent?

$166.67

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

286. Cecilia and Nathan estimate their total cost for a vacation in Australia to be $14,775.

a) What percentage is this cost of their combined gross monthly income of $8775? Calculate to three-figure accuracy.
b) If 72% of their gross monthly income is already consumed by rent, taxes, car payments, and other regular living expenses, what percentage is the trip's cost of their remaining annual disposable income? Calculate to three-figure accuracy.

a) 168%
b) 50.1%

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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287. In a one-month period, a convenience store had sales of $65,560 from its gas pumps and sales of $36,740 from other in-store products. What percent of total sales were from gasoline? Calculate to three-figure accuracy.

64.1%

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

288. A 540 ml can of K-9 Diet dog food contains 28% protein, 15.5% fat and 6% fiber.

a) How many ml of other ingredients are there in the can?
b) The recommended serving for a small dog is 5/8 of a can. How many ml of protein are in one small dog serving?

a) 272.7 ml
b) 94.5 ml

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

289. A provincial Minister of Education recently announced that his government's forecast expenditure of $2.68 billion on education next year represents 23.5% of the provincial budget. Rounded to the nearest million dollars, what is the province's total budget for the next year?

$11,404,000,000

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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290. Unusually high snowfall during the past winter resulted in Brockton's costs for snow plowing and removal to reach $320,200. This represents 127% of its budgeted cost. Rounded to the nearest $100, what amount did Brockton budget for snow clearance?

$252,100

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

291. The royalty rate performing artists receive from songs downloaded from Apple iTunes is 5.7%. If a band received royalties from Apple of $99,736.41 for a year, how many song downloads at $0.99 each did the band have for that year?

1,767,436 song downloads

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

292. Your regular workweek is 7.5 hours per day for five days. If you do not work on seven public holidays and you receive two weeks vacation, what percentage of the total hours in a year are you actually at work? Assume that a year has exactly 52 weeks. Calculate to three-figure accuracy.

20.9%

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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293. In the month of December, Bernie's Bargain Barn had sales of $9,820 in their clothing department, $4,025 in their shoe department and $1830 in accessories. If 17% of the merchandise purchased from the clothing department was returned, 8% was returned from the shoe department and 3% was returned in accessories, what percent of the total revenue for December were the returns if full refunds were given on all merchandise? Calculate to four-figure accuracy.

13.05%

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

294. Ivory hand-soap is advertised as being $99\frac{44}{100}\%$ pure. (It floats!) How many milligrams of impurities are in a 150-gram bar of Ivory soap?

840 mg

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

295. An online discount broker charges a transaction fee of $30 plus an additional 3 cents per share. A full-service broker charges a commission rate of 2.4% of the total dollar value of a stock transaction. Suppose you purchase 200 shares of the Bank of Nova Scotia at $55.40 per share. What percentage are the total fees charged by the online discount broker of the commission you would pay the full-service broker? Calculate to three-figure accuracy.

13.5%

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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296. A full-service broker charges a commission rate of 2.2% of the total dollar value of a stock transaction. A discount broker charges a transaction fee of $25 plus an additional five cents per share. Suppose you purchase 800 shares of Talisman Energy at $21.75 per share. What percentage of the commission fee charged by the full-service broker would you save by using the discount broker? Calculate to three-figure accuracy.

83.0%

Difficulty: Hard
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

297. A province's progressive income tax rates are structured as follows: 16% tax on the first $15,000 of taxable income, 26% on the next $20,000, 35% on the next $40,000, and 45% on any additional taxable income. Calculating to three-figure accuracy, what percentage is an individual's total income tax of his (taxable) income if his taxable income for a year is:

a) $33,000?
b) $66,000?
c) $99,000?

a) 21.5%
b) 28.0%
c) 32.7%

Difficulty: Hard
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

298. In 2009, Canada's population was 33,700,000 and Japan's population was 127,600,000. Canada's land area is 9,093,500 square kilometres but Japan's area is only 377,835 square kilometres. To the nearest 0.01%, what percentage was Canada's population density (people per square kilometre) of Japan's population density in 2009? Calculate to three-figure accuracy.

1.10% of Japan's population density

Difficulty: Hard
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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299. A property sold for 250% of what the vendors originally paid for it. What was that original price if the recent selling price was $210,000?

$84,000

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

300. The Calgary Flames hockey team announced that its season's ticket sales of 11,542 represents 67.50% of the Scotiabank Saddledome's seating capacity. Rounded to the nearest 100, how many seats were not sold to season's ticket holders?

5600

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

301. Studies have shown that the average adult male requires 7.5 hours of sleep a night and females require 20 minutes more than males. If the average life expectancy in Canada is 82.7 years for women and 78 years for men, what percentage are the male waking hours of a female's waking hours for a lifetime?

96.26%

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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302. Stan is a real estate salesperson. He receives 60% of the 4.8% commission that the real estate agency charges on sales. If his income for the past year was $150,480, what was the dollar value of his sales for the year?

$5,225,000

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

303. A stockbroker is paid 45% of the commission her firm charges her clients. If she personally received $134.55 on an $11,500 transaction, what is the firm's commission rate? Calculate to three-figure accuracy.

2.60%

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

304. A mortality rate indicates the fraction of individuals in a population who are expected to die in the next year.

a) If the mortality rate among 35-year-old males is 0.34%, what is the expected number of deaths per year among a province's total of 50,000 such males?
b) If 35-year-old males constitute 0.83% of the overall population in a city of 1.45 million, how many deaths of such males are expected in that city in a year?

a) 170
b) 41

Difficulty: Medium
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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305. Calculate the missing value: Initial Value = $95; Final Value = $100; Percent Change = ?
Calculate the answer accurate to the nearest 0.01%.

5.26%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

306. Calculate the missing value: Initial Value = $100; Final Value = $95; Percent Change = ?
Calculate the answer accurate to the nearest 0.01%.

-5.00%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

307. Calculate the missing value: Initial Value = 35 kg; Final Value = 135 kg; Percent Change = ?
Calculate the answer accurate to the nearest 0.01%.

285.71%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

308. Calculate the missing value: Initial Value = 135 kg; Final Value = 35 kg; Percent Change = ?
Calculate the answer accurate to the nearest 0.01%.

-74.07%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

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309. Calculate the missing value: Initial Value = 0.11; Final Value = 0.13; Percent Change = ?
Calculate the answer accurate to the nearest 0.01%.

18.18%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

310. Calculate the missing value: Initial Value = 0.095; Final Value = 0.085; Percent Change = ?
Calculate the answer accurate to the nearest 0.01%.

-10.53%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

311. Calculate the missing value: Initial Value = $134.39; Final Value = ? Percent Change = -12%.
Calculate the answer accurate to the cent.

$118.26

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

312. Calculate the missing value: Initial Value = 112 g; Final Value = ? Percent Change = 112%.
Calculate the answer accurate to the nearest 0.01 g.

237.44 g

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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313. Calculate the missing value: Initial Value = 26.3 cm; Final Value = ? Percent Change = 300%.
Calculate the answer accurate to the nearest 0.1 cm.

105.2 cm

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

314. Calculate the missing value: Initial Value = 0.043; Final Value = ? Percent Change = -30%.
Calculate the answer to three-figure accuracy.

0.0301

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

315. Calculate the missing value: Initial Value = ? Final Value = $75; Percent Change = 200%.
Calculate the answer accurate to the cent.

$25.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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316. Calculate the missing value: Initial Value = ? Final Value = $75; Percent Change = -50%.
Calculate the answer accurate to the cent.

$150.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

317. $100 is what percent more than $90? Calculate the answer accurate to the nearest 0.01%.

11.11%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

318. $100 is what percent less than $110? Calculate the answer accurate to the nearest 0.01%.

-9.09%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

319. What amount when increased by 25% equals $100? Calculate the answer accurate to the cent.

$80.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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320. What sum of money when increased by 7% equals $52.43? Calculate the answer accurate to the cent.

$49.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

321. $75 is 75% more than what amount? Calculate the answer accurate to the cent.

$42.86

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

322. How much is $56 increased by 65%? Calculate the answer accurate to the cent.

$92.40

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

323. $754.30 is what percent less than $759.00? Calculate the answer accurate to the nearest 0.01%.

-0.62%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

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324. 77,787 is what percent more than 77,400? Calculate the answer accurate to the nearest 0.01%.

0.50%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

325. How much is $75 increased by 75%? Calculate the answer accurate to the cent.

$131.25

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

326. $100 is 10% less than what number? Calculate the answer accurate to the cent.

$111.11

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

327. What amount after a reduction of 20% equals $100? Calculate the answer accurate to the cent.

$125.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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328. What amount after a reduction of 25% equals $50? Calculate the answer accurate to the cent.

$66.67

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

329. What amount after a reduction of $16.\bar{6}\%$ equals $549? Calculate the answer accurate to cent.

$658.80

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

330. How much is $900 after a decrease of 90%? Calculate the answer accurate to the cent.

$90.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

331. How much is $102 after a decrease of 2%? Calculate the answer accurate to the cent.

$99.96

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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332. How much is $102 after a decrease of 100%? Calculate the answer accurate to the cent.

$0.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

333. $750 is what percent more than $250? Calculate the answer accurate to the nearest 0.01%.

200.00%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

334. $250 is what percent less than $750? Calculate the answer accurate to the nearest 0.01%.

-66.67%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

335. How much is $10,000 increased by ¾%? Calculate the answer accurate to the cent.

$10,075.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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336. How much is $1045 decreased by 0.5%? Calculate the answer accurate to the cent.

$1039.78

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

337. What amount when increased by 150% equals $575? Calculate the answer accurate to the cent.

$230.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

338. What amount after being increased by 210% equals $465? Calculate the answer accurate to the cent.

$150.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

339. How much is $150 after an increase of 150%? Calculate the answer accurate to the cent.

$375.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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340. The total cost of a coat (including HST of 13% of the retail price) is $281.37. What is the retail price of the coat?

$249.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

341. On the purchase of a plasma TV, the total cost to the customer (including 5% GST and 7% PST) came to $2797.76. How much GST and how much PST did the customer pay?

GST: $124.90
PST: $174.86

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

342. In 2009, Canada's population reached 33,710,000, a level that was 10.56% higher than ten years earlier. Rounded to the nearest 10,000, what was the population figure for 1999?

30,490,000

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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343. Becker Tools sold 32,400 hammers at an average price of $15.10 in Year 1 and 27,450 hammers at an average price of $15.50 in Year 2. What was the percent change from Year 1 to Year 2 in:

a) The number of hammers sold?
b) The average selling price?
c) The revenue from the sale of hammers?

a) -15.28%
b) 2.65%
c) -13.03%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

344. An investor purchased shares of Digger Resources at a price of $0.55 per share. One year later, the shares traded at $1.55, but they fell back to $0.75 by the end of the second year after the date of purchase. Calculate the percent change in the share price accurate to the nearest 0.01%:

a) In the first year.
b) In the second year.
c) Over both years.

a) 181.82%
b) -51.61%
c) 36.36%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

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345. What was the percent change in unit price when the regular size of Lily soap bars dropped from 100 g to 90 g (with no change in the price per bar)? Calculate the answer accurate to the nearest 0.01%.

11.11% increase

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

346. After Island Farms increased the container size for its premium ice cream from 1.65 L to 2.2 L, the retail price increased from $5.49 to $7.98. What was the percent change in the unit price? Calculate the answer accurate to the nearest 0.01%.

9.02% increase

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

347. Fluffy laundry detergent reduced its regular size from 3.6 kg to 3 kg. The retail price dropped from $7.98 to $6.98. What was the percent change in the unit price? Calculate the answer accurate to the nearest 0.01%.

4.96% increase

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

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348. The retail price of Paradise Island cheddar cheese dropped from $10.98 to $9.98 when the package size was reduced from 700 g to 600 g. What was the percent change in the unit price? Calculate the answer accurate to the nearest 0.01%.

6.04% increase

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

349. The Edmonton Real Estate Board reports that the average selling price of homes last month in the greater Edmonton area was $338,500, an increase of 8.7% over the past year. Rounded to the nearest $100, what was the average selling price one year ago?

$311,400

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

350. Mountain Sports is advertising "30% Off All Skiing Equipment" in its Spring Clearance Sale. On ski boots marked down to $348.60, what is the regular price?

$498.00

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

351. Last year, Canada's exports to the U.S. exceeded imports from the U.S. by 23%. By what percentage were the United States' exports to Canada less than its imports from Canada? Calculate the answer accurate to the nearest 0.01%.

18.70% less

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

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352. For the final seven months of 2013, Apple Computer projects sales of 55.0 million iPhones. This would outpace the projected sales of the Galaxy S4 phones by 35%. What are the projected sales for the Galaxy phone for the same period (rounded to the nearest 10,000)?

40,740,000

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

353. Projected sales for the iPhone in 2012 were 116.4 million which represented an increase of 17.2% on phones sold in 2011. How many iPhones were sold in 2011(rounded to the nearest 10,000)?

99,320,000

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

354. Mutual Fund A charges an annual management fee of 2.38% of money under management. The corresponding management fee for Mutual Fund B is 1.65%. On the same invested amount, what percentage more fees will you pay to Fund A than to Fund B? Calculate the answer accurate to the nearest 0.01%.

44.24%

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

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355. In January of 2014, the Nova Scotia government reduced the HST rate from 15% to 14%. What was the resulting percent reduction in the dollar amount of HST consumers paid on any item? Calculate the answer accurate to the nearest 0.01%.

-6.67%

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

356. In April of 2013, Facebook had 164,130,000 unique visitors, up 6.18% from a year earlier. What was the absolute increase, year-over-year, in the number of unique visitors (rounded to the nearest 10,000)?

9,550,000

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

357. The price of the shares of Nadir Explorations Ltd. fell by 76% in the past year, to the current price of $0.45 per share. In dollars and cents, how much did the price of each share drop in the past year?

$1.43

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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358. A piece of machinery has depreciated by 55% of its original purchase price during the past four years, to the current value of $24,300. What is the dollar amount of the total depreciation during the last four years?

$29,700

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

359. General Paint and Cloverdale Paint normally offer the same prices. For its Spring Specials Sale, General Paint has marked down the price of outdoor latex paint by 30%. What percentage more will you pay if you buy paint at the regular price at Cloverdale? Calculate the answer accurate to the nearest 0.01%.

42.86% more

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

360. Sears reported that its sales in January were down 17.4% from its sales in December. What percentage were December sales of January sales? Calculate the answer accurate to the nearest 0.01%.

121.07%

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

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361. If operating expenses are 40% of revenue, by what percentage does revenue exceed operating expenses?

150%

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

362. Elegance shampoo has a suggested retail price of $4.49 for its 500 ml bottle. The manufacturer of the shampoo wants to increase the unit retail price by 10% at the same time that it reduces the container size to 425 ml. What should be the suggested retail price of the smaller bottle?

$4.20

Difficulty: Hard
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

363. The manufacturer of Caramalt chocolate bars wants to implement a 7.5% increase in the unit retail price along with a reduction in the bar size from 100 g to 80 g. If the current retail price of a 100-g bar is $1.15, what should be the price of an 80-g bar?

$0.99

Difficulty: Hard
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

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364. Goldfield Resources' share price fell by $4 in Year 1 and then rose by $4 in Year 2. If the share price was $6 at the end of Year 1, what was the percent change in share price each year? Calculate the answer accurate to the nearest 0.01%.

Year 1: -40.00%
Year 2: 66.67%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

365. If the Canadian dollar is worth 6.5% less than the U.S. dollar, by what percentage does the U.S. dollar exceed the value of the Canadian dollar? Calculate the answer accurate to the nearest 0.01%.

Exceeds by 6.95%

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

366. The owner listed a property for 140% more than she paid for it 12 years ago. After receiving no offers during the first 3 months of market exposure, she dropped the list price by 10%, to $172,800. What was the original price that the owner paid for the property?

$80,000

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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367. A car dealer normally lists new cars at 22% above cost. A demonstrator model was sold for $17,568 after a 10% reduction from the list price. What amount did the dealer pay for this car?

$16,000

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

368. If the denominator of a fraction decreases by 20% and the numerator remains unchanged, by what percentage does the value of the fraction change?

Increases by 25%

Difficulty: Hard
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

369. The Hampton District school board decided to reduce the number of students per teacher next year by 15%. If the number of students does not change, by what percentage must the number of teachers be increased?

17.65%

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

370. The Lightning laser printer prints 30% more pages per minute than the Reliable laser printer. What percentage less time than the Reliable will the Lightning require for long print jobs? Calculate the answer accurate to the nearest 0.01%.

23.08% less time

Difficulty: Hard
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

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371. If the euro is worth 39% more than the Canadian dollar, how much less (in percentage terms) is the Canadian dollar worth than the euro? Calculate the answer accurate to the nearest 0.01%.

28.06% less

Difficulty: Hard
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

372. A hospital can increase the dollar amount budgeted for nurses' overtime wages during the next year by only 3%. The nurses union has just won a 5% hourly rate increase for the next year. By what percentage must the hospital cut the number of overtime hours in order to stay within budget? Calculate the answer accurate to the nearest 0.01%.

1.90%

Difficulty: Hard
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

373. Simplify and collect the like terms: $4(3a + 2b)(2b - a) - 5a(2a - b)$

$-22a^2 + 21ab + 16b^2$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

374. What amount is 17.5% more than $29.43?

$34.58

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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375. What amount reduced by 80% leaves $100?

$500.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

376. What amount reduced by 15% equals $100?

$117.65

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

377. What is $47.50 increased by 320%?

$199.50

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

378. What amount when decreased by 62% equals $213.56?

$562.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

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379. What amount when increased by 125% equals $787.50?

$350.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

380. What amount is 30% less than $300?

$210.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

381. Simplify and collect the like terms: $\frac{9y-7}{3} - 2.3(y-2)$

$0.7y + 2.2\overline{6}$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

382. Simplify and collect the like terms:

$$P\left(1 + 0.095 \times \frac{135}{365}\right) + \frac{2P}{\left(1 + 0.095 \times \frac{75}{365}\right)}$$

$2.996843P$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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383. Simplify and collect the like terms: $6(4y-3)(2-3y)-3(5-y)(1+4y)$

$-60y^2+45y-51$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

384. Simplify and collect the like terms: $\frac{5b-4}{4}-\frac{25-b}{1.25}+\frac{7}{8}b$

$2.925b-21$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

385. Simplify and collect the like terms: $\frac{x}{1+0.085\times\frac{63}{365}}+2x\left(1+0.085\times\frac{151}{365}\right)$

$3.05587x$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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386. Simplify: $\dfrac{96nm^2 - 72n^2m^2}{48n^2m}$

$2\dfrac{m}{n} - 1.5m$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

387. Evaluate the following expression for the given values of the variables:

$P(1+i)^n + \dfrac{S}{1+rt}$ for

$P = \$2500, i = 0.1025, n = 2, S = \$1500, r = 0.09, t = \dfrac{93}{365}$

$4505.14

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

388. Evaluate the following expression for the given values of the variables:

$L(1-d_1)(1-d_2)(1-d_3)$ for $L = \$340, d_1 = 0.15, d_2 = 0.08, d_3 = 0.05$

$252.59

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

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389. Evaluate the following expression for the given values of the variables:

$$\frac{R}{i}\left[1-\frac{1}{(1+i)^n}\right] \text{ for } R=\$575, i=0.085, n=3$$

$1468.56

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

390. Simplify: $\dfrac{(-3x^2)^3(2x^{-2})}{6x^5}$

$$-\frac{9}{x}$$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

391. Simplify: $\dfrac{(-2a^3)^{-2}(4b^4)^{3/2}}{(-2b^3)(0.5a)^3}$

$$-\frac{8b^3}{a^9}$$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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392. Simplify: $\left(-\frac{2x^2}{3}\right)^{-2}\left(\frac{5^2}{6x^3}\right)\left(-\frac{15}{x^5}\right)^{-1}$

$-\frac{5}{8x^2}$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

393. Evaluate to six-figure accuracy: $(1.0075)^{24}$

1.19641

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

394. Evaluate to six-figure accuracy: $(1.05)^{1/6} - 1$

0.00816485

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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395. Evaluate to six-figure accuracy: $\dfrac{(1+0.0075)^{36}-1}{0.0075}$

41.1527

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

396. Evaluate to six-figure accuracy: $\dfrac{1-(1+0.045)^{-12}}{0.045}$

9.11858

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

397. Evaluate to six-figure accuracy: $\dfrac{(1.00\bar{6})^{240}-1}{0.00\bar{6}}$

589.020

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

398. Evaluate to six-figure accuracy: $(1+0.025)^{1/3}-1$

0.00826484

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

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399. Solve the following equation accurate to the cent:

$$\frac{2x}{1 + 0.13 \times \frac{92}{365}} + x\left(1 + 0.13 \times \frac{59}{365}\right) = \$831$$

$280.97

Difficulty: Medium
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

400. Solve the following equation accurate to the cent:

$$3x(1.03^5) + \frac{x}{1.03^3} + x = \frac{\$2500}{1.03^2}$$

$436.96

Difficulty: Medium
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

401. Solve the following equation accurate to the cent: $\frac{x}{1.08^3} + \frac{x}{2}(1.08)^4 = \$850$

$576.63

Difficulty: Medium
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

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402. Solve the following equation accurate to the cent:

$$2x\left(1 + 0.085 \times \frac{77}{365}\right) + \frac{x}{\left(1 + 0.085 \times \frac{132}{365}\right)} = \$1565.70$$

$520.85

Difficulty: Medium
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

403. Use $N = L(1 - d_1)(1 - d_2)(1 - d_3)$ to calculate d_2, if $N = \$324.30, L = \$498, d_1 = 0.20, d_3 = 0.075$

0.12

Difficulty: Medium
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

404. Use $V_f = V_i(1 + c_1)(1 + c_2)(1 + c_3)$ to calculate c_2, if $V_f = \$586.64, V_i = \$500, c_1 = 0.17, c_3 = 0.09$

-0.08

Difficulty: Medium
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

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405. What percent of $6.39 is $16.39? Calculate to four-figure accuracy.

256.5%

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

406. 80% of what amount is $100?

$125.00

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

407. $\frac{3}{4}\%$ of what amount is $1.00?

$133.33

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

408. Fifteen minutes is what percentage of two hours?

12.5%

Difficulty: Easy
Learning Objective: 02-05 Given any two of the three quantities: percent rate, portion, and base, solve for the third.
Topic: 02-12 The Basic Percentage Problem

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409. Rearrange $FV = PV(1 + i_1)(1 + i_2)$ to isolate i_1 on the left side.

$$i_1 = \frac{FV}{PV(1 + i_2)} - 1$$

Difficulty: Easy
Learning Objective: 02-03 Rearrange a formula or equation to isolate a particular variable.
Topic: 02-09 Manipulating Equations and Formulas

410. Yellowknife Mining sold 34,300 oz of gold in 1992 at an average price of $1160 per ounce. Production was down to 23,750 oz in 1993 because of a strike of the miners, but the average price obtained was $1280 per ounce. What was the percent change from 1992 to 1993 in:

a) The amount of gold produced?
b) The average selling price per ounce?
c) The revenue from the sale of gold?

a) -30.76%
b) 10.34%
c) -23.60%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

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411. Two years ago the shares of Diamond Strike Resources traded at a price of $3.40 per share. One year later the shares were at $11.50, but then they declined in value by 35% during the subsequent year. Calculate:

a) The percent change in the share price during the first year.
b) The current share price.

a) 238.24%
b) $7.48

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

412. Barry recently sold some stock after holding it for 2 years. The stock rose 150% in price during the first year but fell 40% in the second year. At what price did he buy the stock if he sold it for $24 per share?

$16.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

413. Albion Distributors' revenues and expenses for the fiscal year just completed were $2,347,000 and $2,189,000, respectively.

a) If in the current year revenues rise by 10% but expense increases are held to 5%, what will be the percent increase in operating profit?
b) If, instead, revenues decline by 10% and expenses are reduced by 5%, what will be the percent change in operating profit?

a) 79.27%
b) -79.27%

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

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414. The annual net income of the Todd Bros. partnership is distributed so that Ken receives $15,000 more than 80% of Hugh's share. How should a net income of $98,430 be divided between the partners?

Hugh: $46,350; Ken: $52,080

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

415. The profits from a partnership are to be distributed so that Grace receives 20% more than Kajsa, and Mary Anne receives five-eighths as much as Grace. How much should each receive from a total distribution of $36,000?

Kajsa: $12,203.39; Grace: $14,644.07; Mary Anne: $9152.54

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

416. Through a calculation (on Canadian Individual Tax Returns) known as the " Old Age Security clawback", an individual receiving Old Age Security (OAS) benefits must repay an increasing portion of these benefits to the federal government as the individual's net income rises beyond a certain threshold. If the OAS clawback is 15% of net income exceeding $68,000, at what amount of net income must a taxpayer repay all $6300 OAS benefits received in the year?

$110,000

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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417. During a one-day special, a grocery store sells cucumbers at 98 cents each or four for the price of three. At the end of the day, the store's computer reports that revenue from the sale of 541 cucumbers was $418.46. How many cucumbers were sold on the four-for-three promotion?

456

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

418. Simplify: $\left(\frac{3a^3b^2}{a-b}\right)^4$

$$\frac{81a^{12}b^8}{(a-b)^4}$$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

419. Simplify: $\left(\frac{3}{2x^2}\right)^2\left(\frac{6x^3}{5^2}\right)\left(-\frac{x}{5}\right)^{-1}$

$$-\frac{27}{10x^2}$$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

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420. Simplify: $\dfrac{(-2y)^3(x^4)^{-2}}{(x^{-2})^2(4y)^2}$

$-\dfrac{y}{2x^4}$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

421. Simplify: $\dfrac{\left[\left(x^{1/3}\right)\left(x^{2/3}\right)x\right]^{3/2}}{\left(8x^3\right)^{2/3}}$

$\dfrac{x}{4}$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

422. A wholesaler sells to retailers at a 27% discount from the suggested retail price. What is the suggested retail price of an item that costs the retailer $100?

$136.99

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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423. Simplify and collect the like terms: $2a - (-a) + 4a - 5a$

$2a$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

424. Simplify and collect the like terms: $-4x - [-3x + 2(x - 6)]$

$-3x + 12$

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

425. Evaluate the following expression for the given values of the variables:
$R\left[\frac{(1+i)^n - 1}{i}\right]$ for $R = \$1200, i = 0.02, n = 6$

$7569.75

Difficulty: Easy
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-05 Substitution

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426. Simplify: $\dfrac{(2x^4y^2z^3)^2}{4xyz^2}$

$x^7y^3z^4$

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

427. Simplify: $x^7 \div x^{-4} \div x^3$

x^8

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-06 Rules and Properties of Exponents

428. Evaluate the following to six-figure accuracy: $\dfrac{1-(1+0.015)^{-18}}{0.015}$

15.6726

Difficulty: Medium
Learning Objective: 02-01 Simplify algebraic expressions by extracting common factors and applying rules of exponents.
Topic: 02-01 Operations with Algebraic Expressions

429. Solve the following equation: $3(x-6)+5x-2(2x-3)=0$

3

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

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430. Solve the following equation: $9x + 10 = -3x + 34$

2

Difficulty: Easy
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

431. Solve the following equation: $1.5a + 3(4a - 6) = a(1.5)^2$

1.6

Difficulty: Medium
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

432. Solve the following equation accurate to the cent:

$$\frac{x}{(1.02)^6} + 3x(1.02)^4 - \$1000 = \frac{\$4000}{(1.02)^3}$$

$1153.32

Difficulty: Hard
Learning Objective: 02-02 Solve a linear equation in one variable.
Topic: 02-08 Solving a Linear Equation in One Unknown

433. Surinder works in a retail store in Square One in Mississauga. She earns a base salary of $320 per week, and a commission of 3% on sales over her quota of $5000. If Surinder earned $515 last week, what was the value of her sales?

$11,500

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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434. Tickets for the end of semester dance sold for $10 if purchased in advance, and $15 if purchased at the door. If 392 tickets were sold for a total of $4280, how many tickets were sold at the door?

72

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

435. Omar earns $17.00 per hour for a forty-hour week. His overtime rate is 1½ times any hours exceeding forty in a week. If Omar earned $807.50 last week, how many overtime hours did he work?

5

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

436. Mrs. Singh invested $20,000 in two investments paying 2% and 3% respectively. She earned $460 interest for the year. How much did Mrs. Singh invest at 3%?

$6000

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

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437. Kristina is in charge of billing for a company that does computer training. She is preparing an invoice for $1340 for 32 hours of work, which includes training at $70 per hour and preparation of a manual at $25 per hour. How many hours of training are included in the invoice?

12

Difficulty: Medium
Learning Objective: 02-04 Solve "word problems" that lead to a linear equation in one unknown.
Topic: 02-10 Solving Word Problems

438. How much is $10 after an increase of 900%?

$100.00

Difficulty: Easy
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

439. Manvir bought a stock for $80 last week. Yesterday, the stock went up by 20%. Today it dropped by 20%. What is the current value of the stock?

$76.80

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

440. Cliff just received a raise to $18.45 per hour from $18.00. What is the percent increase in his hourly rate?

2.5%

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

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441. If the CPI increases from 120.0 to 125.0 over a period, what is the percent increase in the CPI?

4.17%

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-13 Percent Change

442. A coat is reduced by 30% to a sale price of $45.99. What was the selling price of the coat?

$65.70

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-14 Calculating Vi or Vf When c is Known

443. Sales have increased by 10% over last year. What percentage less were last year's sales than this year's sales? Calculate the answer accurate to the nearest 0.01%.

9.09%

Difficulty: Medium
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

444. Madison found a sweater at a suburban discount mall for 25% less than at a store in downtown Toronto. What percentage more would she have paid if she bought the sweater in downtown Toronto? Calculate the answer accurate to the nearest 0.01%.

33.33%

Difficulty: Hard
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

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445. If December sales were 30% more than November sales, by what percent are November sales less than December sales? Calculate the answer accurate to the nearest 0.01%.

23.08%

Difficulty: Hard
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

446. If operating expenses are 25% of revenue, by what percentage does revenue exceed operating expenses?

300%

Difficulty: Hard
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

447. Wilfredo can do a task 35% faster than Kunal. What percentage less time than Kunal does Wilfredo take to do a task? Calculate the answer accurate to the nearest 0.01%.

25.93%

Difficulty: Hard
Learning Objective: 02-06 Solve problems involving percent change.
Topic: 02-15 Reversing a Percent Difference

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448. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
$100	$10	$110	?	?	?

Income yield: 10.00%
Capital gain yield: 10.00%
Rate of total return: 20.00%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

449. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
$100	$10	$90	?	?	?

Income yield: 10.00%
Capital gain yield: -10.00%
Rate of total return: 0.00%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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450. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
$90	$10	$86	?	?	?

Income yield: 11.11%
Capital gain yield: -4.44%
Rate of total return: 6.67%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

451. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
$135	$0	$151	?	?	?

Income yield: 0.00%
Capital gain yield: 11.85%
Rate of total return: 11.85%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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452. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
$1367	$141	$1141	?	?	?

Income yield: 10.31%
Capital gain yield: -16.53%
Rate of total return: -6.22%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

453. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
$879	$280	$1539	?	?	?

Income yield: 31.85%
Capital gain yield: 75.09%
Rate of total return: 106.94%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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454. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
$2500	$200	$0	?	?	?

Income yield: 8.00%
Capital gain yield: -100%
Rate of total return: -92.00%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

455. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
$1380	$250	$2875	?	?	?

Income yield: 18.12%
Capital gain yield: 108.33%
Rate of total return: 126.45%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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456. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
$2000	?	$2200	5%	?	?

Income: $100.00
Capital gain yield: 10.00%
Rate of total return: 15.00%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

457. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
$4300	?	$3950	?	?	-5%

Capital gain yield: -8.14%
Income yield: 3.14%
Income: $135.02

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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458. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
$3730	$250	?	?	?	5%

Income yield: 6.70%
Capital gain yield: -1.70%
Final value: $3666.59

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

459. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
$1800	$50	?	?	150%	?

Final value: $4500.00
Income yield: 2.78%
Rate of total return: 152.78%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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460. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
?	?	$1800	?	-40%	-30%

Initial value: $3000.00
Income yield: 10.00%
Income: $300.00

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

461. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
?	$100	?	5%	15%	?

Initial value: $2000.00
Final value: $2300.00
Rate of total return: 20.00%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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462. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
$1600	?	?	8%	?	0%

Income: $128.00
Capital gain yield: -8.00%
Final value: $1472.00

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

463. Calculate the missing quantities. Calculate percentages accurate to the nearest 0.01%.

Initial Value	Income	Final Value	Income Yield	Capital Gain Yield	Rate of Total Return
?	$150	$270	?	?	80%

Initial value: $233.33
Income yield: 64.29%
Capital gain yield: 15.71%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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464. One year ago, $13,000 was invested in units of a mutual fund. The units paid a distribution of $260 during the year, but the mutual fund units are now worth only $11,400. Calculated to the nearest 0.01%, what has been the:

a) Income yield?
b) Capital gain yield?
c) Rate of total return?

a) 2.00%
b) -12.31%
c) -10.31%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

465. Rose purchased units of the Trimark Fund 1 year ago at $24.10 per unit. Today they are valued at $25.50. On the intervening December 31, there was a distribution of $0.83 per unit. Accurate to the nearest 0.01%, calculate Rose's income yield, capital gain yield, and rate of total return for the year.

Income yield: 3.44%,
Capital gain yield: 5.81%
Rate of total return: 9.25%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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466. The market value of Stephanie's bonds has declined from $1053.25 to $1021.75 per bond during the past year. In the meantime she has received two semiannual interest payments of $35. Calculate Stephanie's income yield, capital gain yield, and rate of total return for the year. Determine yields and rates of return accurate to the nearest 0.01%.

Income yield: 6.65%
Capital gain yield: -2.99%
Rate of total return: 3.66%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

467. Vitaly's shares of Offshore Petroleum have dropped in value from $36.75 to $32.25 during the past year. The shares paid a $0.50 per share dividend 6 months ago. Calculate Vitaly's income yield, capital gain yield, and rate of total return for the year. Determine yields and rates of return accurate to the nearest 0.01%.

Income yield: 1.36%
Capital gain yield: -12.24%
Rate of total return: -10.88%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

468. Jeff purchased some Target preferred shares on the Toronto Stock Exchange for $56.49. The shares pay a quarterly dividend of $0.30. Twelve months later the shares were trading at $65.75. What was Jeff's rate of total return for the year, accurate to the nearest 0.01%?

18.52%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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469. In the last year, the market value of the Muirs' bonds has declined from $1040.25 to $1020.75 each, and the coupons paid $30 in interest semiannually. Calculate the following:

a) Income yield. Determine the yield accurate to the nearest 0.01%.
b) Capital gain yield. Determine the yield accurate to the nearest 0.01%.
c) Rate of total return. Calculate rates of return accurate to the nearest 0.01%.

a) 5.77%
b) -1.87%
c) 3.90%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

470. One year ago, Art Vandelay bought Norwood Industries shares for $37 per share. Today they are worth $40 per share. During the year, Art received dividends of $0.60 per share. Accurate to the nearest 0.01%, what was his income yield, capital gain yield, and rate of total return for the year?

Income yield: 1.62%
Capital gain yield: 8.11%
Rate of total return: 9.73%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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471. One year ago, Christos bought 1000 units of the Dominion Aggressive Growth Fund at $20.35 per unit. Today a unit's value is $19.10. During the year, the fund made a distribution of $0.40 per unit. Accurate to the nearest 0.01%, determine Christo's:

a) Income yield.
b) Capital gain yield.
c) Rate of total return.

a) 1.97%
b) -6.14%
c) -4.17%

Difficulty: Easy
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

472. One year ago, Morgan invested $5000 to purchase 400 units of a mutual fund. He has just noted in the Financial Post that the fund's rate of return on investment for the year was 22% and that the current price of a unit is $13.75. What amount did the fund distribute as income per unit during the year? Calculate the result to the nearest cent.

$1.50

Difficulty: Medium
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

473. The Globe and Mail Report on Business noted that the shares of Compact Computers produced a 55% rate of total return in the past year. The shares paid a dividend of $0.72 per share during the year, and they currently trade at $37.50. What was the price of the shares 1 year ago? Calculate the result to the nearest cent.

$24.66

Difficulty: Medium
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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474. Gabriel received $200 of income from an investment during the past year. This represents an income yield of 4%. If the capital gain yield for the year was 10%, what was the value of the investment (not including income) at the end of the year? Calculate the result to the nearest cent.

$5500.00

Difficulty: Medium
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

475. An $8600 investment was worth only $7900 one year later. If the rate of total return for the year was -5%, how much income was received from the investment during the year? Calculate the result to the nearest cent.

$270.00

Difficulty: Medium
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

476. What is meant by a "capital loss"?

A reduction in the market value of an investment during the holding period.

Difficulty: Medium
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

477. What is meant by the "total return" from an investment?

It is the sum of the income and capital gain (or loss) from an investment.

Difficulty: Medium
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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478. Does the combined effect of a 20% increase followed by a 20% decrease differ from the combined effect of a 20% decrease followed by a 20% increase? Justify your answer.

No. If you think of the relevant formula, $V_f = V_i(1 + c_1)(1 + c_2)$, the order of the percent changes affects the order of multiplication. However, it is a basic axiom of mathematics that the order of multiplication does not affect the product.

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

479. How much will an investment of $100 be worth after 20 years if it increases in value by 25% in half of the years, but declines by 20% in the other years?

$100. For a 25% increase, 1 + c = 1.25. For a 20% decrease, 1 + c = 0.8. Note that 1.25 x 0.8 = 1.00. That is, a 20% decrease exactly offsets a 25% increase. Since we have the same number of 25% increases as 20% decreases, the investment's value will be unchanged (at $100) after 20 years.

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

480. The federal government cut transfer payments to the provinces by a total of 20% over a five-year period. In the next budget speech, the Minister of Finance announced "the level of transfer payments will be restored to their former level by a 20% increase to be phased in over the next two years." Is this an accurate statement? Explain briefly.

No. A 20% increase does not offset a 20% decrease.
$(1 - 0.20)(1 + 0.20) = 0.96$ which tells us that the transfer payments will be 4% below their level before the cuts started.

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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481. Adjusted for stock splits, the price of Microsoft shares rose 6.84%, 13.71%, 13.50%, and 36.04% in the years 2011 to 2014, respectively. In 2015, the share prices fell 1.13%.

a) What was the overall five-year percent change in the price of Microsoft shares? Determine accurate to the nearest 0.01%.
b) If the share price at the end of 2015 was $45.57, what was the price at the beginning of 2011?

a) 85.46%
b) $24.57

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

482. A company's annual report states that the prices of its common shares had changes of 23%, 10%, -15%, and 5% during the past 4 fiscal years. If the shares were trading at $30.50 just after the 5% increase in the most recently completed year:

a) What was the price of the shares at the beginning of the 4-year period?
b) How much (in dollars and cents) did the price decline in the third year?

a) $25.26
b) $5.13

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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483. Victor cannot find the original record of his purchase four years ago of units of the Imperial Global Fund. The current statement from the fund shows that the total current value of the units is $47,567. From a mutual fund database, Victor found that the fund's rates of return for Years 1 to 4 have been 15.4%, 24.3%, 32.1%, and -3.3%, respectively.

a) What was Victor's original investment in the fund?
b) What was the dollar increase in the value of his investment in Year 3?

a) $25,959.69
b) $11,953.13

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

484. One of the more volatile mutual funds in recent years has been the AGF China Focus Fund. The fund's annual returns in successive years from 2007 to 2012 inclusive were 30.53%, -41.67%, 27.75%, 1.27%, -20.71% and 17.0%, respectively. What was the fund's equivalent compound annual return for the six years ended December 31, 2012? Calculate percentages accurate to the nearest 0.01%.

-8.62%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

485. A portfolio earned -13%, 18%, 5%, 24%, and -5% in five successive years. What was the portfolio's five-year compound annual return? Calculate percentages accurate to the nearest 0.01%.

26.98%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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486. The Fidelity Latin America Sr B fund (managed by Fidelity Investments Canada) has had rather volatile returns for the five years ending December 31, 2012. As of December 31, 2012, what three-year and five-year compound annual returns did the fund report if its annual returns in successive years from 2008 to 2012 inclusive were -41.8%, 62.5%, 9.84%, -15.3% and 0.54%, respectively? Calculate percentages accurate to the nearest 0.01%.

3-year: -6.46%
5-year: -11.54%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

487. The price of Bionex Inc. shares rose by 25% in each of 2 successive years. If they began the 2-year period at $12 per share, what was the percent increase in price over the entire 2 years? Determine rates of return accurate to the nearest 0.01%.

56.25%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

488. The price of Biomed Corp. shares began a two-year period at $12, but fell 25% in each year. What was their overall percent decline in price? Determine rates of return accurate to the nearest 0.01%.

-43.75%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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489. What rate of return in the second year of an investment will wipe out a 50% gain in the first year? Determine rates of return accurate to the nearest 0.01%.

-33.33%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

490. What rate of return in the second year of an investment will nullify a 25% return on investment in the first year? Determine rates of return accurate to the nearest 0.01%.

-20.00%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

491. What rate of return in the second year of an investment is required to break even after a 50% loss in the first year? Determine rates of return accurate to the nearest 0.01%.

100.00%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

492. What rate of return in the second year of an investment is required to break even after a rate of return of -20% in the first year? Determine rates of return accurate to the nearest 0.01%.

25.00%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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493. After two consecutive years of 10% rates of return, what rate of return in the third year will produce a cumulative gain of 30%? Determine rates of return accurate to the nearest 0.01%.

7.44%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

494. After two consecutive years of 10% losses, what rate of return in the third year will produce a cumulative loss of 30%? Determine rates of return accurate to the nearest 0.01%.

-13.58%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

495. In 3 successive years the price of the common shares of XYZ Ltd. fell 35%, 55%, and 80%, ending the third year at 75 cents.

a) What was the share price at the beginning of the 3-year skid? Calculate the result to the nearest cent.
b) How much (in dollars and cents) did the share price drop in the third year? Calculate the result to the nearest cent.

a) $12.82
b) $3.00

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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496. Three years ago, General Avionics announced plans to triple its annual R&D spending over the next 4 years. If R&D spending was increased by 25%, 30%, and 35% in the first 3 years, what minimum percent increase is required in the fourth year to reach the target? Calculate percentages accurate to the nearest 0.01%.

36.75%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

497. An investor purchased preferred shares on the Toronto Stock Exchange for $15.00. The shares pay a semi-annual dividend of $1.12. Six months later, the shares were trading at $14.50. What was the rate of total return for the six-month period? Calculate rates of return accurate to the nearest 0.01%.

4.13%

Difficulty: Medium
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

498. What rate of return in the second year of an investment is required to break even after a 30% loss in the first year? Calculate rates of return accurate to the nearest 0.01%.

42.86%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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499. After two consecutive years of 7% rates of return, what rate of return in the third year will produce a cumulative gain of 25%? Calculate rates of return accurate to the nearest 0.01%.

9.18%

Difficulty: Medium
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

Company Name	Share price ($) at the end of:		Dividends ($) paid in:		
	2012	2013	2014	2013	2014
TD Bank	84.33	94.24	47.78	0.41	0.41
Potash Corporation	40.69	32.96	35.32	0.35	0.35
Cameco Corporation	19.59	22.04	19.05	0.10	0.10
Suncor Energy	32.71	37.24	36.90	0.20	0.28
BlackBerry Ltd.	11.80	7.90	12.74	0.00	0.00

Name of Mutual Fund	Unit price ($) at the end of:		Distribution ($) in:		
	2012	2013	2014	2013	2014
AGF Canadian Dividend Fund	41.48	46.27	49.14	3.20	2.90
Mawer New Canada Fund	47.98	69.92	73.42	1.76	4.92
BMO Dividend Fund	45.43	52.80	58.60	0.75	1.30
Desjardins Dividend Growth Fund	14.37	17.23	18.36	0.16	0.46
Scotia Canadian Bond Fund	11.71	11.16	11.72	0.35	0.36

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500. Calculate the income yield, capital gain yield, and rate of total return in 2014 for Potash Corporation's shares and Mawer New Canada Fund units. Determine yields and rates of return accurate to the nearest 0.01%.

Potash: 1.06%, 7.16%, 8.22%
Mawer: 7.04%, 5.01%, 12.05%

Difficulty: Hard
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

501. Calculate the income yield, capital gain yield, and rate of total return in each of 2013 and 2014 for Cameco Corporation shares and Desjardins Dividend Growth Fund units. Determine yields and rates of return accurate to the nearest 0.01%.

Cameco (2013): 0.51%, 12.51%, 13.02%
Cameco (2014): 0.45%, -13.57%, -13.12%
Desjardins (2013): 1.11%, 19.90%, 21.01%
Desjardins (2014): 2.67%, 6.56%, 9.23%

Difficulty: Hard
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

502. Calculate the income yield, capital gain yield, and rate of total return in each of 2013 and 2014 for BlackBerry shares and Scotia Canadian Bond Fund units. Determine yields and rates of return accurate to the nearest 0.01%.

BlackBerry (2013): 0.00%, -33.05%, -33.05%
BlackBerry (2014): 0.00%, 61.27%, 61.27%
Scotia (2013): 2.99%, -4.70%, -1.71%
Scotia (2014): 3.23%, 5.02%, 8.25%

Difficulty: Hard
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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503. Assume that the Suncor Energy shares will pay a $0.54 per share dividend in 2015. What must the share price be at the end of 2015 for a total rate of return in 2015 of 10%? Calculate the result accurate to the cent.

$40.05

Difficulty: Hard
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

504. Assume that the Potash Corporation shares will pay a $0.48 per share dividend in 2015. What must the share price be at the end of 2015 for a total rate of return in 2015 of 7%? Calculate the result accurate to the cent.

$37.31

Difficulty: Hard
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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505. The following table shows the rates of total return in successive years from 2010 to 2014 for the Mawer New Canada Fund and for the benchmark Toronto Stock Exchange S&P/TSX Composite Index. By how much did the mutual fund's overall percentage return exceed or fall short of the Index's growth? Determine rates of return accurate to the nearest 0.01%.

Fund Name	Rate of total return (%)				
	2010	2011	2012	2013	2014
Mawer New Canada Fund	23.91	1.09	16.36	49.42	12.19
S&P/TSX Composite Total Return Index	8.82	-1.49	8.17	11.48	12.06

The Mawer New Canada Fund's overall percentage return exceeded the Index's growth by 99.47%

Difficulty: Hard
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

506. The following table presents the rates of total return in successive years from 2010 to 2014 for the BMO Dividend Fund and for the benchmark Toronto Stock Exchange S&P/TSX Composite Index. By how much did the mutual fund's overall percentage return exceed or fall short of the Index's growth? Determine rates of return accurate to the nearest 0.01%.

Fund Name	Rate of total return (%)				
	2010	2011	2012	2013	2014
BMO Dividend Fund	9.71	-2.62	6.92	17.91	13.54
S&P/TSX Composite Total Return Index	8.82	-1.49	8.17	11.48	12.06

The BMO Dividend Fund's overall percentage return exceeded the Index's growth by 8.06%

Difficulty: Hard
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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507. The following table presents the rates of total return in successive years from 2010 to 2014 for the Fidelity Canadian Asset Allocation Fund and for the benchmark Toronto Stock Exchange S&P/TSX Composite Index. By how much did the mutual fund's overall percentage return exceed or fall short of the Index's growth? Determine rates of return accurate to the nearest 0.01%.

Fund Name	Rate of total return (%)				
2010	**2011**	**2012**	**2013**	**2014**	
Fidelity Canadian Asset Allocation Fund	11.09	-4.25	3.83	11.34	11.06
S&P/TSX Composite Total Return Index	8.82	-1.49	8.17	11.48	12.06

The Fidelity Canadian Asset Allocation Fund's overall percentage return fell short of the Index's growth by 8.29%

Difficulty: Hard
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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508. The following table presents the rates of total return in successive years from 2010 to 2014 for the PH&N Bond Fund and for the benchmark Toronto Stock Exchange S&P/TSX Composite Index. By how much did the mutual fund's overall percentage return exceed or fall short of the Index's growth? Determine rates of return accurate to the nearest 0.01%.

Fund Name	Rate of total return (%)				
	2010	**2011**	**2012**	**2013**	**2014**
PH&N Bond Fund	6.85	8.33	3.43	-1.26	8.66
S&P/TSX Composite Total Return Index	8.82	-1.49	8.17	11.48	12.06

The PH&N Bond Fund's overall percentage return fell short of the Index's growth by 16.41%

Difficulty: Hard
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

509. Can the income yield from an investment be negative? Explain or give an example.

Yes. If the expenses associated with an investment exceed the income from the investment, then the net income and the income yield will be negative.

Difficulty: Hard
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

510. Is it possible for the capital gain yield to exceed 100%? Explain or give an example.

Yes. If the value of an investment more than doubles during the holding period, the capital gain is more than 100%.

Difficulty: Hard
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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511. Is it possible for a capital loss to be worse than -100%? Explain or give an example.

Yes. Suppose, for example, you bought a $160,000 condominium as an investment property using $40,000 of your own money and $120,000 borrowed on a mortgage loan. Subsequently, the condo's market value fell to $100,000 because "leaky condo" problems were discovered in the building. At that point, you have lost more than 100% of your initial $40,000 investment because the condo's market value is less than the amount owed on the mortgage loan. You must still repay the balance on the loan after the proceeds of the sale are applied to the loan.

Difficulty: Hard
Learning Objective: 02-07 Calculate the income yield, capital gain yield, and rate of total return on stocks and mutual funds.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

512. If a series of compound percent changes are all positive, is the overall percent change larger or smaller than the sum of the individual changes? Justify your answer.

The overall percent change is larger because each successive change acts on previous increases as well as the original amount.

Difficulty: Hard
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

513. If a series of compound percent changes are all negative, is the overall percent decrease larger or smaller (in magnitude) than the sum of the individual changes? Justify your answer.

The magnitude of the overall percent change is smaller than the sum. To illustrate, consider two successive 10% decreases from a beginning value of $1000. The first 10% decrease causes a $100 decrease to $900. The second 10% decrease acts on $900 rather than on the initial $1000. The dollar amount of the second reduction is only $90. The overall reduction is $190, which is only 19% (not 20%) of the original $1000.

Difficulty: Hard
Learning Objective: 02-08 Combine rates of total return for successive holding periods.
Topic: 02-16 Investment Returns from Stocks and Mutual funds

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